LONI Provides UNO High-Speed Business Continuity After Katrina

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Presentation Order

• Business Continuity
• UNO
• LONI
• LONI + UNO
• Q & A
Hurricane Katrina Impact

• LONI moved in on August 26, 2005
• Katrina hit August 29, 2005
• During the following year UNO setup University disaster recovery at LSU
Hurricane Katrina Impact

• LONI returned to UNO on Fall 2006

• How could LONI help UNO return to New Orleans? and maybe retain something at LSU for the next hurricane?
Katrina Rainfall

Hurricane Katrina
Aug. 24-Sept. 1, 2005
3065 sites

Maxima:
16.43" Perrine, FL
14.82" Big Branch, LA

LONI Provides UNO High-Speed Business
Continuity After Katrina
Scope Business Continuity

• Business Continuity -- The Institution's ability to maintain or restore its business and academic services when some circumstances threatens or disrupts normal operation.
Scope Business Continuity

• The paradigm shift is not only moving from traditional disaster recovery models to business continuity but the focus attention is on those stakeholders, students and faculty.
EDUCAUSE Report Findings

• Alternate IT sites are the exception rather than the rule.
• The interrupted education can have devastating consequences for students, our customers.
UNO

• The University of New Orleans is a major urban research university in the Louisiana State University system, with 12,000 students, 49 majors, 39 masters, and 11 doctoral programs.

• Located on the shores of Lake Pontchartrain in New Orleans, LA, 5 feet above sea level.
UNO Business Need and Desire

• Pre-Katrina, < August 29, 2005
  – Disaster Recovery was major motivation/focus
  – Hurricane Threats, only minor evacuations since last major strike 40 years earlier.
  – Desired improved services support: technology, funding and political limitations.

• Post-Katrina, September 1, 2005
  – Scope of Disaster shifts focus to Business Continuity (in a hurry!)
UNO Business Options

• Pre-LONI solutions
  – Pre-Katrina
  • Commercial-DR site, renting 3rd party web and email services, providing minimal support only
  – Post-Katrina
  • Temporary-site at State sponsored Data Center.
  • Emergency-site at sister Higher-Ed institution.
UNO Business Option with LONI

UNO CE @ UNO New Orleans

LONI PE @ UNO

LONI PE @ LSU

MPLS

Internet

UNO CE @ LSU Baton Rouge

10/15/08
LONI

• Just over three years old
• State funded and operated
• La. Board of Regents
• Optical + HPC
• Education Backbone
• Research Backbone
• Housed at LSU
LONI Community

• Higher Education
  – LSU System, 5 campuses
  – ULS System, 8 campuses
  – SU System, 3 campuses
  – Tulane
  – LCTCS, 49 campuses
  – MSU, OleMiss, USM and JSU
• State Government – DOTD, LPB and DoE
• K12
• Economic Development through research
LONI Services

• Internet2
• NLR
• Internet (3+CPS+TransitRail)
• QoS Backbone
• Metro-Ethernet extensions
• Traditional Layer3 IPv4 Unicast & Multicast
• MPLS Layer2 Psuedowire
• MPLS Layer Virtual Private LAN Services
DWDM Backbone
External Networks

[Diagram showing connections between various network nodes like LSU, La Tech, LSU HSC, ULL, Tulane, UNO, LSU HSC, McNeese, NSU, SLU, Alex, ULM, and LSU, with annotations for 10GE Layer-1, 10GE Layer-3, 10GE Layer-2, and 10GE Layer-3, and additional nodes for CPS, DCN, and STARLIGHT.]

10/15/08

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Bandwidth Services
LONI Building Blocks

• The Network
  – Layer-2 or Layer-3 data services, videoconferencing (Access Gird, H.323, Telepresence), quality of service, campus/school access; state/regional network backbone aggregation, Internet services, national network connector
• High Performance Computing
  – About 85 TFlops of compute
  – About 250 TBytes of disk and 400TBytes of tape
• The LONI Institute (Research)
  – Cyberinfrastructure collaboration across the six LONI research universities
LONI HPC

• Five IBM System p5 p575-IH Clusters
  – 14 nodes with 8-way IBM Power5's @ 1.9 GHz, 16 GB RAM, 146 GB HDD, 4x10/100/1000 Ethernet
  – AIX 5L v5.2 / v5.3
  – IBM Federation high-speed switch
  – Head and storage
• 851.2 GF theoretical peak; 4.256 TF total
LONI HPC

• QueenBee Dell Linux Cluster
  – 680 nodes with dual socket Intel “Clovertown” Xeons (8 cores) @ 2.33 GHz, 8 GB RAM, 80 GB HD, Gb Ethernet
  – Red Hat Enterprise Linux (RHEL) v4
  – Cisco (Topspin) InfiniBand high-speed interconnect (4xIB), 50% blocking

• 50.7 TF theoretical peak; 5.44 TB RAM
LONI HPC

• Six Remote Dell Linux Clusters
  – 132 nodes with dual socket Intel “Woodcrest” Xeons (4 cores) @ 2.33 Ghz,
  – 4 GB RAM, 80 GB HD, Gb Ethernet
  – Red Hat Enterprise Linux (RHEL v4)
  – Cisco InfiniBand high-speed interconnect (4xIB), non-blocking
• 4.92 TF theoretical peak; 528 GB RAM
LONI HPC

• Central site will have:
  – 225 TB raw, 192 TB usable from Data Direct Networks (DDN)
  – Will provide central /home storage as well as global /scratch space
  – Using Cluster File Systems' Lustre file system

• Remote sites will have:
  – 14.0 TB raw, 12 TB usable from DDN
  – Additional local /scratch storage per system
LONI HPC

• PetaShare – “an innovative distributed data archival, analysis and visualization instrument for data intensive collaborative research. PetaShare will enable transparent handling of underlying data sharing, archival, and retrieval mechanisms; and will make data available to the scientists for analysis and visualization on demand.”

• ~40 TB plus ~500 TB archival
UNO Business Decision

• Economic Impact

• Technical Impact
UNO Business and Technical Challenges

• With LONI

• Without LONI
UNO Technical Implementation

• With LONI
  – Acceptance Plan
    • Circuit Testing
    • Bandwidth Testing
  – Application Plan
    • What Hardware will be needed?
    • What Software will be deployed?
    • What Applications will be supported?
  – Configuration Plan
    • What Layer2 changes are needed? And by whom?
    • What Layer3 changed are needed? And by whom?
  – Operation Plan
    • How long to switch?
    • For how long?
    • How long to switch back?
UNO Business Continuity Operations

• With LONI
  – Transition Plan
  – Staffing Plan
  – Communications Plan
UNO Measures of Success

• With LONI
  – What measurements, real or perceived, can be used to determine whether or how successful the Business Continuity plan?
UNO Business Growth with LONI

UNO CE @ UNO New Orleans
LONI PE @ UNO
LONI PE @ LSU
LONI PE @ LSU HSC Shreveport
UNO CE @ LSU HSC Shreveport

Internet @ LSU Baton Rouge
Internet

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Questions

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References